UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,464	11/03/2003	Thorald Horst Bergmann		3479

7590 08/30/2005

Thorald Bergmann
Adalbert-Stifter-Str. 8
D-82418 Murnau
D-82418 Murnau, D-82418
GERMANY

EXAMINER	
VAN ROY, TOD THOMAS	
ART UNIT	**PAPER NUMBER**
2828	

DATE MAILED: 08/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/698,464	BERGMANN ET AL.	
	Examiner	Art Unit	
	Tod T. Van Roy	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 November 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/03/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

Figures 1a,b and 2a,b should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Figure 7 #2a. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet,

even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 1, and 10-12 are objected to because of the following informalities:

Claim 1 is confusing given the labels for driver switches. It is believed the claim would be more correct to either eliminate the labels, or make the labels different than those of the corresponding dependent claims.

Claims 10-12 provide for the use of a Pockels cell, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced. The changing of the word "application" to "system" is recommended.

Appropriate correction is required.

Specification

The abstract of the disclosure is objected to because it contains the reference to figure 4 found in the parenthetical statement, "Fig.4 is used for this abstract". Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

Claims 13 and 14 are rejected as failing to define the invention in the manner required by 35 U.S.C. 112, second paragraph.

The claim(s) are narrative in form and replete with indefinite and functional or operational language. The structure which goes to make up the device must be clearly and positively specified. The structure must be organized and correlated in such a manner as to present a complete operative device. The claim(s) must be in one sentence form only. Note the format of the claims in the patent(s) cited.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, and 4-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Stingl et al. (WO 02/28305, rejection references are directed towards the English translation of this document – US PGPUB 2004/0102767).

With respect to claim 1, Stingl discloses a driver for a Pockels cell (fig.5 #17) arranged in a H-configuration characterized by switches (S1B, S2B) (fig.5 #48, 49) that

are wired parallel to the recharging resistors (R1, R2) (fig.5 #54, 55) or replace these resistors.

With respect to claim 2, Stingl discloses the Pockels cell driver as outlined in claim 1, and further discloses the resistor(R2) (fig.5 #55) and a switch(S2B) (fig.5 #53) be wired in parallel.

With respect to claims 4 and 9, Stingl discloses a driver for a Pockels cell (fig.5 #17) with a first node (SK1) (fig.5 first point left side of cell #17) that is connected to a first connector of the Pockels cell and a second node (SK2) (fig.5 first point right side of cell #17) that is connected to a second connector of the Pockels cell, whereas the first node (SK1) is connected via a first wire to the first potential (HV) (wire extending through resistor #54 to first potential U1) and via a second wire containing a switch (S1) to a second potential (wire extending through switch #48 to second ground potential), whereas the second node (SK2) is connected via a third wire to the first potential (HV) (wire extending through resistor #55 to first potential U1) and via a first wire connecting a switch (S2) to a second potential (wire extending through switch #449 to second ground potential), characterized by at least one further switch (SIB, S2B) (fig.5 #52) that connects one or both of the nodes (SKI,SK2) to the first potential (HV).

With respect to claim 5, Stingl discloses the Pockels cell driver as outlined in claim 4, and further discloses recharging resistors (R1, R2) (fig.5 #54, 55) that connect the nodes (SKI, SK2) to the first potential (HV) and a further switch (S2B) (fig.5 #53) that connects the second node (SK2) to the first potential (HV).

With respect to claim 6, Stingl discloses the Pockels cell driver as outlined in claim 4, and further discloses nodes (SKI, SK2) which are connected with a single wire containing switches (SIB, S2B) to the first potential (HV) (wire extending through resistor #54 and switch #52 to first potential U1, wire extending through resistor #55 and switch #53 to first potential U1).

With respect to claim 7, Stingl discloses the Pockels cell driver as outlined in claim 4, and further discloses low voltage control signals that individually control each of the switches of the circuit ([0047], low power input voltage to switch controller branched off before being amplified to a high power signal).

With respect to claim 8, Stingl discloses the Pockels cell driver as outlined in claim 4, and further discloses only two control signals, on/off, which control all the switches such that one of the signals, on, induces voltage to be applied to the cell ([0052]), and the other, off, induces the removal of voltage from the cell ([0051]) (definition of on/off signal arbitrary to whether switch is considered on/off or signal is considered on/off, this on/off feature could also be considered an inherent feature of an electronic switch as being used here, sense the only signal sent to any switch is always on or off).

With respect to claim 10, Stingl discloses the Pockels cell driver as outlined in claim 9, and further discloses applying the Pockels cell in a pulsed laser system ([0010]).

With respect to claim 11, Stingl discloses the Pockels cell driver as outlined in claim 10, and further discloses the laser system to comprise a laser source (fig.2 #12,

13), resonator (fig.2 #8), and Pockels cell (fig.2 #17) located internally or externally to the resonator.

With respect to claim 12, Stingl discloses the Pockels cell driver as outlined in claim 10, and further discloses the system to comprise a pulsed laser source (fig.2 #12/13 plus #16 creating pulses), an optical amplifier (fig.2 #13, [0030]), and a Pockels cell arranged in the amplifier (fig.2 #17 arranged inside of amplifying resonator cavity between mirrors #14 and #11).

> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-2 are rejected under 35 U.S.C. 102(a) as being anticipated by the applicant's admitted prior art.

With respect to claim 1, the prior art discloses a driver for a Pockels cell (fig.1a) arranged in a H-configuration characterized by switches (SIB, S2B) (fig.1a #S1, S2) that are wired parallel to the recharging resistors (R1, R2) (fig.1a #R1, R2) or replace these resistors.

With respect to claim 2, the prior art discloses the Pockels cell driver as outlined in claim 1, and further discloses the resistor(R2) (fig.1a #R2) and a switch(S2B) (fig.1a #S2) be wired in parallel.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art in view of Stingl.

With respect to claim 3, the prior art discloses the Pockels cell driver as outlined in claim 1, and further teaches replacing 1 resistor with 1 switch (fig.2a), but does not teach replacing both resistors with switches. Stingl teaches a Pockels cell driver using four (2 additional switches) instead of two with different valued voltage supplies attached to the additional switches. It would have been obvious to one of ordinary skill in the art at the time of the invention to replace both resistors with switches as this would allow for the delivery of the full voltage of the high voltage source to the Pockels cell (spec. pg. 6) and in addition, allow for the use of different sources on each side of the cell for choice of power being supplied (Stingl, fig.5).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stingl in view of Zhang et al. (US 2001/0038074).

With respect to claim 13, Stingl teaches the Pockels cell driver as outlined in claim 10, but does not teach the use of the Pockels cell driver in a pump/probe procedure. Zhang teaches a Pockels cell and control wherein an optical excitation pulse and a delayed optical monitoring pulse is directed onto a medium whereas the signal induced by the delayed monitoring pulse is measured as a function of delay between the two pulses, whereas the pulse sequence of pump- and probe-pulse and the delay from one to another is determined by the Pockels cell and the driver of that Pockels cell (crystal using Pockels effect [0003], description of function [0008-10], with delay timing [0012]). It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the Pockels cell and driver of Stingl with the system of Zhang in order to detect terahertz pulses and form images of the objects from which the pulses are reflected (Zhang, abs.).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stingl in view of Opower (US 5361275).

With respect to claim 14, Stingl teaches the Pockels cell driver as outlined in claim 10, but does not teach the use of the Pockels cell driver in a materials processing procedure. Opower teaches a Pockels cell and control whereby a first laser pulse is directed onto the surface of the material creating a plasma whereby after some delay a further number of pulses is directed onto the plasma above the surface of the material, whereby the first laser pulse and the further number of laser pulses is determined by the Pockels cell and its driver (Pockels cell and control - col.1 lines 54-64, col.2 lines 10-14;

pulses and plasma – col.2 lines 39-53). It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the Pockels cell and driver of Stingl with the system of Opower to remove material from a target during a production of layers for the functional structure of a semiconductor component (Opower, col.3 lines 52-60).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TVR

MINSUN O. HARVEY
PRIMARY EXAMINER